

SALIENT CHARACTERISTICS
TAPE RECORDER TEST SET (0.5 Hz to 60 kHz)

FT0GN-B

- 1.0 GENERAL This procurement requires a flutter meter capable of measuring long term drift and instantaneous flutter in the recording and/or reproducing speed of magnetic recording/reproducing systems. The unit shall contain an integral wave-analyzer tunable from 0.5 Hz to 60 kHz.
- 2.0 CLASSIFICATION The tape recorder test set described herein shall meet the requirements of MIL-T-28800D, Type III, Class 5, Style E, Color R for Navy shipboard, submarine, and shore applications with the following exceptions:
- a. The non-operating temperature requirement is limited to the range of -40°C to +70°C.
 - b. The relative humidity requirement is limited to 95% noncondensating.
 - c. The operating and non-operating altitude requirements are not invoked.
 - d. The EMI requirement is not invoked.
- 3.0 OPERATIONAL REQUIREMENTS The equipment shall be capable of measuring signals within the parameters and accuracies specified herein.
- 3.1 Test Signal Input
- 3.1.1 Frequency Ranges: At least 1.69, 3.38, 6.75, 13.5, 27, 54, 108, 216 and 432 kHz
 - 3.1.2 Input Level: 20 mV to 2 Vrms
 - 3.1.3 Input Impedance: 100 kohms, unbalanced
- 3.2 Drift Measurement Meter
- 3.2.1 Frequency Range: At least dc to 0.7 Hz $\pm 20\%$ FAST and dc to 0.2 Hz $\pm 20\%$ SLOW
 - 3.2.2 Test Range: At least ± 0.03 to $\pm 10\%$ full scale
 - 3.2.3 Meter Accuracy: At least $\pm 5\%$ full scale
- 3.3 Flutter Measurement Meter
- 3.3.1 Bandwidth: At least 313 Hz to 20 kHz

3.4 Indicating Modes

3.4.1 Peak to Peak: To 1 standard deviation (random peaks occurring less than 32% of the time) corresponding to twice the rms value of truly random flutter, 2 standard deviations (random peaks occurring less than 5% of the time) corresponding to IRIG standard measurement if the distribution, and to 3 standard deviations (random peaks occurring less than 0.3% of the time excluded) flutter processes are truly random with a Gaussian amplitude standard deviations corresponding to true peak-to-peak flutter.

3.4.2 Test Range: At least 0.01 to 10% full scale

3.4.3 Meter Accuracy: At least $\pm 5\%$ full scale at 100 Hz

3.5 Internal Test Oscillator

3.5.1 Accuracy: Crystal controlled to at least $\pm 0.1\%$ of the selected frequency

3.5.2 Output Voltage: At least 1 Vrms $\pm 10\%$

3.5.3 Impedance: 50 ohms unbalanced

3.6 Drift Modulator Output (BNC)

3.6.1 Frequency Range: -3 dB down at 30 Hz $\pm 20\%$ and -3 dB at greater than 0.7 Hz in FAST and SLOW

3.6.2 Output Voltage: At least ± 0.1 V for full scale meter indication

3.6.3 Impedance: 1 kohms unbalanced

3.6.4 Bandwidth: Less than 1 dB at 10 Hz and -3 dB at 30 Hz

3.6.5 Accuracy: At least $\pm 3\%$ of full scale at dc

3.7 Flutter Demodulator Output (BNC)

3.7.1 Frequency Ranges: At least -3 dB from less than 0.2 Hz to 313 Hz, 625 Hz, 1.25 kHz, 2.5 kHz, 5 kHz, 10 kHz, and 20 kHz

3.7.2 Response: At least ± 0.5 dB from 2 Hz to 60% BW and at least ± 1.0 dB from 1 Hz to 80% BW

3.7.3 Attenuation: Less than 22 dB at 2 times BW

3.7.4 Output Voltage: At least 0.1 Vp-p full scale meter indication

3.7.5 Impedance: 600 ohms unbalanced

3.7.6 Accuracy: At least $\pm 3\%$ of full scale at 100 Hz

3.8 Equivalent Internal Instrumentation Noise Less than 0.005% p-p

3.9 External Meter Input

3.9.1 Frequency: Less than ± 1 dB from 2 Hz to 20 kHz

3.9.2 Impedance: 2.5 kohms unbalanced

3.9.3 Sensitivity: 1 mV to 1 Vp-p full scale

3.9.4 Accuracy: At least $\pm 5\%$ of full scale at 100 Hz

3.10 Wave Analyzer

3.10.1 Frequency Range: 0.5 Hz to 20 kHz continuously tunable

3.10.2 Accuracy: At least $\pm 10\%$ from 0.5 Hz to 50 Hz and at least $\pm 5\%$ from 50 Hz to 20 kHz

3.10.3 Response: At least ± 1.5 dB

3.10.4 Bandwidth: At least 3 dB down at $\pm 5\%$ of selected frequency and at least 20 dB down at 0.5 and 2 times the selected frequency

3.10.5 Output Voltage: At least 1.2 Vp-p

3.10.6 Impedance: 1 kohms

4.0 GENERAL REQUIREMENTS

4.1 Dimensions: The total volume of the unit shall not exceed 25,300 cm³ (1,544 in³) with maximum height 89 mm (3.5 in).

4.2 Weight: The total weight of the unit shall not exceed 9.1 kg (20 lbs).

4.3 Power: 115/230 Vac $\pm 10\%$, 50 to 60 Hz $\pm 10\%$, 25 W maximum

4.4 Calibration Interval: The calibration interval shall be at least 12 months minimum. The equipment shall be within all accuracy requirements specified herein, with a 72% or greater confidence factor following a calibration interval of 12 months.